Types of bariatric surgery and its subsequent effects on CVD risk factors.

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Introduction

The fundamental basis for bariatric surgery for the purpose of weight loss is the determination that severe obesity is a disease with multiple adverse effects on health, In individuals who have been unable to sustain weight loss by non-surgical techniques, effective weight loss can be reversed or enhanced. The criteria for surgical intervention were specified by an NIH consensus group in 1991. Medical therapy for extreme obesity frequently fails to accomplish long-term weight reduction. There are several biological factors that have a part in the difficulty of maintaining weight reduction.

After one year of intensive lifestyle change, the average weight reduction is 10%, and after eight years, the average weight loss is 5.3 percent. Although the quantity of weight reduced varies, it is significant to improve medical and comorbidity control. Short- and long-term weight reduction may be aided by pharmacotherapy. According to the NIH consensus panel, bariatric surgery is recommended for all patients with a BMI (kg/m^2) more than 40, as well as those with a BMI of 35-40 who have concurrent conditions [1].

Bariatric surgical procedures

Roux-en-Y gastric bypass: In the 1970s, Mason developed Roux-en-Y gastric bypass in response to the high complication rates associated with ileojejunal intestinal bypass, a procedure that resulted in malabsorption, reduced food intake, and considerable weight reduction, among other advantages, but also had a high complication rate. In this procedure, the stomach is transected, resulting in a gastric pouch with a capacity of around one ounce. Ingested nutrients are redirected away from the stomach's body, duodenum, and proximal jejunum via a Roux-en-Y gastrojejunostomy. The vagal trunks are not disturbed, but a variable number of branches going to the stomach body are separated during the stomach division.

Sleeve gastrectomy: This therapy removes around 80% of the stomach's body, resulting in a tubular stomach due to the stomach's decreased curvature. An anastomosis from the stomach to the small intestine is not required. Despite the fact that meal intake is limited, stomach emptying is expedited [2].

Biliopancreatic diversion with duodenal switch: A sleeve gastrectomy is a more difficult surgery to conduct. The proximal duodenum and the bypassed intestine form an anastomosis, resulting in some nutritional loss. This therapy is rarely utilised due to the increased risk of short- and long-term complications.

Expected benefits in terms of CVD risk factors

The ultimate objective of weight loss, whether medical or surgical, is to reduce co-morbidities, improve quality of life, and reduce all-cause mortality. Despite the importance of recognising these dangers and taking efforts to implement effective medical care, surgery has been shown to be more beneficial, albeit to variable degrees.

Body fat distribution: From 3 to 12 months following bariatric surgery, the percentage loss of visceral adipose tissue is comparable to or larger than the percentage loss of total or subcutaneous adipose tissue in people without diabetes, while the visceral depot was variable at 24 months. There was preferential mobilisation of visceral fat at 2 and 6 months after LABG compared to total and subcutaneous AT; however, this result was reserved only for patients who had excessive amounts of visceral adipose tissue prior to surgery, and this preferential visceral fat reduction occurs only in these patients [3].

After a four-year follow-up, the effects of malabsorptive biliointestinal bypass (BIBP) and restrictive LAGB on total fat loss and trunk fat were evaluated, and the benefits of BIBP were greater on total fat loss and trunk fat. At 90 days after a laparoscopic Roux-en-Y Gastric Bypass (RYGB) operation, changes in glucose homeostasis, lipid levels, and adipokine profile have been observed in a number of ways.

Dyslipidemia: The insulin-resistant metabolic environment that comes with excess body fat is the primary cause of obesity-related dyslipidemia. Hypertriglyceridemia, low HDL-C levels, apolipoprotein B and VLDL-C increases that fluctuate, and small dense LDL and HDL are all instances. Although LDL-C can be raised in those who are moderately to severely obese, it is far less prevalent than the lipid and lipoprotein abnormalities mentioned above. In a meta-analysis of 75 papers, baseline and follow-up LDL-C values were reported in 48 studies, with baseline LDL-C of 123 7 mg/dL. Follow-up lipids were tested up to 4 years following RYGB, and baseline LDL-C was 123 7 mg/dL.

Despite significant heterogeneity in LDL-C and all other lipid trials, subgroup analysis revealed LDL-C decreases by 1 month intervals up to 4 years [standard mean difference (SMD) 1.31 to 0.52; 95th percent confidence intervals (CI), p0.00001]. HDL-C levels were assessed in 47 different studies. This study identified a time-dependent trend. After 6

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months, there was no significant change in HDL-C, but after 12 months, there was a substantial rise (SMD +1.10, +0.57 to +1.63 95 percent CI, p0.0001), which was sustained for all following time periods examined, including 4 years [4].

The effect of metabolic surgery on hypertension prevalence varies depending on the technique and time period. During the active weight loss phase, blood pressure lowers, and antihypertensive drugs are typically discontinued. Because of the period of hypertension previous to surgery, the consequences are less visible after weight stabilisation [5]. In a comprehensive review and meta-analysis of 21 studies using a variety of surgical procedures at intervals between 24 and 50 months, the relative risk of hypertension was decreased by 468 percent, and the risk of hypertension was lowest when BMI was reduced by 10 kg/m^2.

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